Preventing Newborn Injury Through Parent Education on Safe Skin-to-Skin Care

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A Project presented to the faculty of The University of North Carolina at Chapel Hill in fulfillment of the requirements for Undergraduate Honors

Date Completed: 4/7/2017

Honors Advisor Approval: _____

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Abstract

The American Academy of Pediatrics recommends skin-to-skin (STS) contact for all mothers and newborns for at least the first house after birth whether they are breastfeeding or bottle-feeding, or delivered via vaginal birth or cesarean. While the benefits of skin-to-skin care are extremely beneficial, providing safe care is still considered the number one priority for mother and baby. There is very little evidence published surrounding the possible risks of skin-to-skin care and therefore, awareness of the issue is limited. This lack of awareness among healthcare professionals and parents has caused a barrier to skin-to-skin care and has shown increased instances in which the beneficial care led to potentially dangerous events such as falling, suffocation, sudden unexpected postnatal collapse and other complications. The purpose of this project was to develop a teaching tool for parents about newborn safety with a primary focus on performing skin-to-skin care in the hospital, as well as at home. A short informational video for new parents on safety measures and STS care was created based on current evidence and practice recommendations. The video was created as a service-learning project for a birthing center in a large public hospital. The majority of expectant parents who saw the video during prenatal classes rated it highly and recommended it for all parents.

Introduction

Skin-to-skin (STS) care is defined by the American Academy of Pediatrics (AAP) as "the practice of placing infants in direct contact with their mothers or other caregivers with the ventral skin of the infant facing and touching the ventral skin of the mother/caregiver (chest-to-chest)" (Feldman-Winter & Goldsmith, 2016, p. e1). The practice is an influential part of the Baby-Friendly Hospital Initiative, an international program that was developed in 1991 by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) with a mission to inspire, acknowledge, and recognize healthcare systems that provide the ideal level of care for newborn feeding, as well as bonding between mother and baby (WHO & UNICEF, 2009). In order to provide this optimal level of care for newborn feeding and mother/infant bonding, the Baby-Friendly Hospital Initiative recommends that mothers should be helped with introducing breastfeeding within thirty minutes of birth and therefore, should start STS care immediately following birth. It is also recommended that the mother and baby remain in STS for at least one hour following birth (Baby-Friendly USA; Feldman-Winter & Goldsmith).

Originally referred to as "kangaroo care", STS care was an initiative initially developed to assist premature infants with their transition from fetal to neonatal life (Ferber & Makhoul, 2004). In the 1970s, Peter de Chateau (1976) originally introduced the practice of early mother/baby contact in Sweden. His report was later followed by several studies and reports that eventually coined terms such as "kangaroo care" and "skin-to-skin contact". While reports surrounding "kangaroo care" mainly focused on the benefits experienced by infants born prematurely, the practice later evolved into use with healthy, full-term infants as well.

The AAP recommends skin-to-skin contact for all mothers and newborns regardless of whether they are breastfeeding or bottle-feeding, or delivered via vaginal birth or cesarean. They

recommend skin-to-skin contact be performed immediately after birth once the mother is stable medically and to continue the care for at least one hour (Feldman-Winter & Goldsmith, 2016). With these AAP recommendations and substantial positive evidence surrounding STS care, the practice quickly became a standard part of routine care after vaginal and cesarean births across the United States. In numerous studies, substantial short-term and long-term benefits have been demonstrated not only for babies, but also for mothers and other caregivers following immediate STS contact after birth (Mörelius, Örtenstrand, Theodorsson, & Frostell, 2015). As STS contact becomes an increasingly popular practice performed immediately following birth, the prevalence of newborn infant falls and sudden unexpected postnatal collapse (SUPC) has also increased.

While the benefits of STS care have proven to be extremely beneficial, providing safe care is still considered the number one priority for mother and baby. In 2016, the AAP published the first set of policies and guidelines on how STS care should be performed in the hospital setting, as well as the home (Feldman-Winter & Goldsmith, 2016). Prior to this publication, there was very little evidence published surrounding the possible risks of STS care and therefore, awareness of the issue was limited. This lack of awareness among healthcare professionals and parents has caused a barrier to skin-to-skin care and has shown increased instances in which the beneficial care led to potentially dangerous events. When STS care is performed incorrectly or without supervision and assistance, newborns are at risk of life-threatening events such as falling, suffocation, sudden unexpected postnatal collapse, and other complications.

When a study performed by the Intermountain Healthcare System in Utah was published by the AAP in 2008, initial light was shed on this important yet seemingly overlooked healthcare concern of infant falls (Monson, Henry, Lambert, Schmutz, & Christensen, 2008). While almost all hospitals monitor for potential fall risks in their adult patient population, almost none of them

monitor for potential fall risks in the vulnerable newborn population. According to the AAP, the time period following birth creates very unique obstacles in regard to infant falls and drops. However, the concept of infant falls and drops is extremely understudied in comparison with the subject of falls in populations such as the neurologically impaired or elderly (Feldman-Winter & Goldsmith, 2016).

Purpose

The purpose of this project was to develop a teaching tool for parents about newborn safety with a primary focus on performing skin-to-skin care in the hospital, as well as at home. A short informational video for new parents on safety measures and STS care was created based on current evidence and practice recommendations. The video was created as a service-learning project for a birthing center in a large public hospital. It was shown to expectant parents during prenatal classes. The parents were then asked to evaluate the video.

Background

In 2004, the AAP published recommendations for mothers and their newborn babies to perform STS contact immediately after birth due to the positive health benefits of the practice (Ferber & Makhoul, 2004). Even after a mother has given birth via cesarean, skin-to-skin care is occurring in the operating room for mothers under regional anesthesia and accompanied by a nurse (Hung & Berg, 2011). After the cesarean procedure, skin-to-skin contact can be initiated once the mother is alert and awake enough to respond to her newborn (Feldman-Winter & Goldsmith, 2016). The practice of STS care usually coexists with the practice of "rooming-in" which provides the opportunity for mothers and other caregivers and their infants to be together in the same room for the entire hospital stay (Feldman-Winter & Goldsmith, 2016).

Research has shown that skin-to-skin care provides a long list of overwhelmingly positive effects. These benefits include helping to regulate and stabilize the newborn's temperature, thus avoiding harmful complications such as hypothermia (Ludington-Hoe & Morgan, 2014). Multiple studies have shown that STS care successfully promotes the initiation of breastfeeding and enhances the bonding and closeness between the mother-infant dyad (Jaafar, Lee, & Ho, 2012; Moore, Anderson, Bergman, & Dowswell, 2012). Using the mother's body heat introduces a more natural "warmer" for the baby in a non-emergent situation and increases the bonding between the mother or caregiver and the baby. According to a 2012 Cochrane Review, performing skin-to-skin care immediately following birth promotes successful breastfeeding, increases heart and respiratory strength, and even reduces infant crying (Moore et al., 2012). STS care is associated with improvements in introduction, length, and exclusiveness of breastfeeding and enhanced milk production (Ludington-Hoe & Morgan, 2014). Skin-to-skin contact has also shown to decrease stress and pain levels in newborns. When a newborn is being held against the mother's skin and experiencing pain during a blood draw and another procedure, he or she experiences less pain when compared to those who were not held skin-to-skin (Codipietro, Ceccarelli, & Ponzone, 2008; Gray, Miller, Philipp, & Blass, 2002). However, the list of proven benefits does not stop there. Skin-to-skin care after birth can help stabilize blood glucose concentrations and prevent hypoglycemia (Moore et al., 2012; Ludington-Hoe & Morgan, 2014). Also, there have been no apparent short-term or long-term negative effects of skin-to-skin care when the practice is performed safely and correctly (Moore et al., 2012). In fact, infants who are placed prone away from their mothers are more likely to experience problems compared with infants placed into skin-to-skin contact (Ludington-Hoe & Morgan, 2014).

Skin-to-skin contact not only provides numerous benefits to newborns, but it has also shown to provide benefits to mothers and even fathers as well. Immediately following birth, STS care has been shown to lower maternal stress and increases paternal insight of stress in the relationship involving the mother and the newborn (Mörelius et al., 2015). When the practice is accompanied with breastfeeding immediately after birth, the risk of postpartum hemorrhage is reduced (Saxton, Fahy, Rolfe, Skinner, & Hastie, 2015). Skin-to-skin care has been associated with decreased levels of depression in mothers during the postpartum period (Mörelius et al., 2015). Fathers also benefit from STS care; research has shown that fathers who perform STS care experience reduced stress and anxiety and improved interaction with their infants (Shorey, Hong-Gu, & Morelius, 2016).

Statement of the Problem

Although the benefits of skin-to-skin care are clearly evident, there is nothing more important than keeping an infant safe from harm. The highest concern surrounding immediate skin-to-skin care after birth is preventing sudden unexpected postnatal collapse (SUPC). SUPC occurs when a baby, who was originally in a considerably stable cardiac and respiratory state, experiences a temporary or permanent interruption of breathing or cardiorespiratory failure (Feldman-Winter & Goldsmith, 2016). Just as importantly, falls can occur during skin-to-skin care, especially if the newborn and caregiver are unobserved by staff members (Feldman-Winter & Goldsmith, 2016). Related to both of these safety issues is a lack of standardization of care in the prevention of newborn falls and sudden unexpected postnatal collapse (Ainsworth, Summerlin-Long, & Mog, 2016). This lack of standardization can be attributed to the fact that safety concerns surrounding the proper execution of skin-to-skin care have only recently been a topic of discussion. Concerns related to the safety issues surrounding improper skin-to-skin care

technique have only increased since attention has turned to the safety aspects of skin-to-skin care.

Factors have been identified that increase the risk of newborn injury related to STS care and infant falls. Mothers or other caregivers may fall asleep while holding the infant STS. After long labors and births, parents are exhausted. Sedative effects of pain medication can add to a mother's fatigue. Caregivers are not getting the adequate rest they need due to hospital staff's constant rounding, which interrupts parents' natural sleep cycles; in addition, new parents are waking frequently to feed and care for newborns (Ainsworth et al., 2016). Other factors contributing to infant falls and incidents of SUPC include the lack of supervision by hospital staff immediately after birth when mothers are breastfeeding or parents are moving the baby (Slogar, Gargiulo, & Bodrock, 2013). Additionally, a lack of awareness by staff about the safety concerns surrounding STS care is contributing to the issue.

While many expectant parents are knowledgeable about the benefits of early STS care, most are unaware of the associated risks. The recent attention in the literature to the safety issues surrounding STS care is raising awareness of health care professionals. This, in turn, is prompting changes in prenatal education to inform expectant parents about the benefits of STS care as well as the potential risks and how to safely perform STS care. In the majority of infant falls and SUPC, parents were lacking the education they had needed in order to be able to avoid these events entirely (Slogar, Gargiulo, & Bodrock, 2013). The vulnerable population of newborn infants relies on adults to protect them from harmful events such as falling and SUPC (Ainsworth et al., 2016). Therefore, if parents were properly educated on the benefits of skin-to-skin contact, as well as how to perform skin-to-skin care safely, infants would be at decreased risk for injury.

Literature Review

Search Criteria

The search criteria included keywords such as skin-to-skin contact, breastfeeding, safe breastfeeding positioning, infant falls, newborn falls, sudden unexpected postnatal collapse, newborn falls prevention, and safe-sleep policies. These terms were entered into PubMed, Google Scholar, and CINAHL databases. Results were limited to articles published in English between 2006 and 2016.

Falls

Since the monitoring of infant falls is a relatively new concept of concern, there is a large need for more literature to be published on these topics and consequently more research studies to be performed. Newborn safety in the hospital is a relatively new topic of interest for the immediate postnatal period (Feldman-Winter & Goldsmith, 2016).

According to the National Database of Nursing Quality Indicators (2013, p. 106), the definition of a newborn fall is "a fall in which a newborn, infant, or child being held or carried by a health care professional, patient, family member, or visitor falls or slips from that person's hands, arms, lap, etc. and can occur when a child is being transferred from one person to another." The event is considered a fall no matter onto which surface the child falls (e.g., bed, chair, floor). It is still considered a fall regardless of whether or not it results in injury to the infant (National Database of Nursing Quality Indicators, 2013). A study by Ruddick, Platt, and Lazaro (2010) concluded that newborns are vulnerable to injuries such as skull fractures, even when the falls occur from surfaces at low levels. Since falls can lead to injury and even death of the newborn in worst case scenarios, these situations can cause extreme emotional distress for

parents, family members, and hospital staff, as well as legal issues for the hospital and health care system (Matteson, Henderson-Williams, & Nelson, 2013).

The discussion of infant falls in the hospital setting was prompted by a study conducted in 2008 by Monson and colleagues. It was the first major study published surrounding the topic of infant falls. It documented infant falls occurring over a 3-year period in a Utah 18-hospital health care system. Within their multihospital health care system, the researchers reported a rate of 1.6 falls per 10,000 births. Assuming this 18-hospital health care system was representative of all of the hospitals across the United States, this study showed that approximately 600 to 700 hospital infant falls occur each year in the United States. This was the first study to point out to healthcare systems across the nation that there is no standardized protocol for hospitals to follow in an effort to prevent in-hospital newborn falls (Monson et. al, 2008).

Helsley and colleagues conducted a two-year analysis of infant falls in a seven-hospital system in Oregon. They found an infant fall rate of 3.94 to 4.14 falls per 10,000 births, which created an even higher estimate of 600 to 1,600 infant falls occurring in the United States every year (Helsley, McDonald, & Stewart, 2010). According to the Centers for Disease Control and Prevention (CDC, 2016), the leading cause of injury for all children from birth to the age of 19 is falls. Additionally, the number one cause of infant head injuries are falls that occur from a small distance (Ainsworth et al., 2016). As research shows, even though the frequency rate of infant falls is moderately low, it is evident that these falls do occur (Matteson et al., 2013). Infant falls, especially in the hospital setting where 24-hour health care professionals are nearby, are preventable events. In order to move towards total prevention and initiate anticipatory guidance mechanisms, it is important to look at the characteristics of the fall events and well as studying and identifying individuals who are at risk (Matteson et al., 2013).

The risk of a newborn fall is present at the time of birth and continues throughout the entire hospital stay until discharge (Matteson et al., 2013). The majority of the infant falls discovered in the initial 2008 study occurred in the early morning hours and when a mother or father was holding her/his baby in the hospital bed or a reclining chair (Monson et. al, 2008). In the 2010 study conducted by Helsley, McDonald, and Stewart, nine of the nine infants in the documented fall cases were located in bed with a parent during the time when the fall occurred (Helsley et al., 2010). In another 2010 study, most of the newborn fall study participants fell from the mothers' arms or knees when in a bed or chair, one infant fell from a mother's arms while being placed in a bassinet and one fall occurred from a hospital bed (Ruddick, Platt, & Lazaro, 2010). The picture that presents is one of a fatigued mother trying to breastfeed her newborn late at night and falling asleep, which results in her newborn being dropped and falling to the floor (Galuska, 2011). Additionally, in an attempt to remain in their beds, mothers may try leaning over the bedrail to place their infant into their designated bassinet, an action that also increases the risk of infant falls (Matteson et al., 2013).

Risk factors for falls can be identified for mothers and their babies. Postpartum women can be at risk of falling and they may place their infants at risk for injury due to falling or being dropped. Mothers who are unsteady on their feet or impaired in such a way that they produce unstable ambulation or are in a state of drowsiness due to a dose of medication are a high fall risk (Matteson et al., 2013). The AAP recommends that mothers who are post-cesarean should be closely monitored since they can be especially at risk for dropping their infant due to their restricted mobility and reactions to anesthesia (Feldman-Winter & Goldsmith, 2016). Additionally, mothers can be at high risk of suffocating or dropping their infant due to the sedative effects of their pain medications.

Evidence shows that inpatient adult falls have been studied extensively. The research has led to evidence-based practice to prevent falls as well as strategies to lower their penalizing costs to the hospital and the patient (Galuska, 2011). However, according to a study conducted in 2011 on the newborn population, in-hospital newborn falls continue to be underrecognized and underreported both by caregivers as well as healthcare professionals (Paul, Goodman, Remorino, & Bolger, 2011). This underreporting of infant falls could be caused by caregivers feeling guilty or fearful, which could also lead to lying about the event or putting off telling a health care professional (Paul et al., 2011).

Sudden Unexpected Postnatal Collapse

Alongside the troubling issue of falls is the condition known as sudden unexpected postnatal collapse (SUPC). According to the British Association of Perinatal Medicine, the characteristics that lead to SUPC include an infant greater than at least 35 weeks' gestation who qualifies with the following criteria: "(1) is well at birth (normal 5-minute Apgar and deemed well enough for routine care), (2) collapses unexpectedly in a state of cardiorespiratory extremis such that resuscitation with intermittent positive-pressure ventilation is required, (3) collapses within the first 7 days of life, and (4) either dies, goes on to require intensive care, or develops encephalopathy" (Nassi et. al., 2013, p. S25-S26).

A study by Ludington-Hoe and Morgan (2014) provided insights on the occurrence of sudden unexpected postnatal collapse. When these rare events do occur, it is usually when the mother is breastfeeding her newborn. The researchers found that about thirty percent of SUPC cases transpire during the two-hour time frame following birth, another thirty percent during the two to twenty-four hours following birth, and the remaining percentage between one and seven days following birth. Ludington-Hoe and Morgan (2014) propose that as the newborn falls asleep

on his/her mother's chest after breastfeeding, his/her face can effortlessly embed into his/her mother's breast tissue or into the skin below the breast, which can lead to an episode of SUPC.

Multiple factors have been recognized as possible risks for SUPC. Some of these include: maternal obesity, primiparity, lack of caregiver education about techniques for safe skin-to-skin care, maternal use of sedative or pain medications, maternal fatigue, bed-sharing or co-sleeping, breastfeeding without being observed, baby's mouth and nose are occluded while placed skin-to-skin or breastfeeding, and lack of observation by nursing staff (Ludington-Hoe & Morgan, 2014).

Proper positioning of the newborn on the mother's chest is not only essential for beneficial skin-to-skin contact, but it is also essential for safety. Ludington-Hoe and Morgan (2014) reported that newborns who experienced SUPC were found in a variety of unsafe positions. These positions included: prone at the mother's breast, prone on the mother's chest or abdomen, swaddled and supine in the mother's arms, beside a parent on the parent's bed, and prone or supine or on their sides in their own cots.

Learning to Balance Safety and Rest

It is a well-known fact that childbirth is exhausting. According to the AAP, after childbirth mothers and caregivers are exhausted and have irregular sleep cycles, which most likely leads to sleep deprivation (Feldman-Winter & Goldsmith, 2016). In a study by Slogar, Gargiulo, and Bodrock (2013), anecdotal accounts of infant falls showed that mothers commonly fell asleep while simultaneously holding their infants, which placed these newborns at an increased risk for falling or being dropped. This study also showed that sleep deprivation and distorted sleep patterns before labor, hormonal fluctuations during the pregnancy, anesthesia and analgesia administration, and the practice of breastfeeding all add to the fatigue experienced

postpartum (Slogar et al., 2013). Additionally, mothers often fall asleep in skin-to-skin contact due to the release of oxytocin. Oxytocin is also released in the infant; therefore, both mother and baby experience feelings of relaxation and happiness (Ludington-Hoe & Morgan, 2014).

After birth, it is common for mothers who are initially awake and alert enough to respond to their newborn infant to abruptly and unpredictably become sleepy, ill, or unable to continue holding their newborn. There are reports of breastfeeding mothers who have accidentally fallen asleep while breastfeeding in their beds or in a chair, which can lead to SUPC or falls. Often, close physical bonding between the mother and newborn occurs during infant feeding and skin-to-skin contact (Feldman-Winter & Goldsmith, 2016).

Healthcare systems are then challenged with balancing the priority of mother/infant bonding with the priority of mother/infant safety (Matteson et al., 2013). Essentially, mothers should be evaluated to measure their level of fatigue and sleep deprivation immediately after birth and then continuously be monitored frequently through the remainder of their hospital stay (Feldman-Winter & Goldsmith, 2016).

Research shows that fathers or other supportive caregivers who can provide skin-to-skin care can also experience a range of exhaustion symptoms such as lightheadedness, fatigue, incoordination or other factors that can abruptly cause them to be unable to proceed with holding the newborn infant safely (Feldman-Winter & Goldsmith, 2016). With the mention of caregivers, it is important to note that although supportive doulas and family member caregivers are excellent additional observers for a mother and her baby since they are often present continuously during the hours after birth, they do not replace the monitoring by hospital staff (Ludington-Hoe & Morgan, 2014).

Health care professionals and parents are essential in efforts to prevent newborn infant falls and sudden unexpected postnatal collapse (Slogar et al., 2013). Infant falls and sudden unexpected postnatal collapse are two major events following birth that healthcare professionals and family members can work towards completely preventing (Feldman-Winter & Goldsmith, 2016). Enhancing the education of healthcare professionals, caregivers, and especially parents on the topic of safe-sleep practices is instrumental to newborn safety (Matteson et al., 2013). The AAP's "safe sleep" recommendations largely help reduce the risk of in-hospital newborn infant falls as well as sudden unexpected postnatal collapse. Their recommendations state that mattresses and pads that the babies sleep upon should be firm as well as have the ability to keep their shape so that no gaps are produced between the mattress and the sides of the bassinet or crib (AAP Task Force on Sudden Infant Death Syndrome, 2016). The American Academy of Pediatrics also recommends that newborn infants be placed on a firm mattress where there are no additional objects, even soft ones (AAP Task Force on Sudden Infant Death Syndrome, 2016). Additionally, these infants should be placed on their back instead of on their stomachs to go to sleep, which has shown to significantly decrease the risk of falls (AAP Task Force on Sudden Infant Death Syndrome, 2016).

Ainsworth, Summerlin-Long, and Mog (2016) reported that prevention programs were beneficial when hospitals' openly admitted that newborn infant falls and sudden unexpected postnatal collapse were relevant issues and that education for the family and staff is imperative for initiating falls prevention. Several intervention programs have been created to educate patients and hospital staff on the topics of newborn falls and SUPC in order to make it a more open subject of discussion and to raise awareness (Ainsworth et al., 2016; Galuska, 2011; Matteson et al., 2013). The literature reports families expressing their hesitancy to disclose falls

that had occurred (Helsley et al., 2010). On the opposite side of the issue, nurses and other health care professionals admitted being reluctant to discuss the topic of falls and sudden unexpected postnatal collapse with their patients (Helsley et al., 2010). Education on the risks associated with bed-sharing such as entrapment, suffocation, and sudden infant death syndrome (SIDS) has also been recommended for staff to share with parents (AAP Task Force on Sudden Infant Death Syndrome, 2016).

In 2011 Galuska described the importance of the developing and implementing universal newborn fall prevention programs. In this study, a hospital developed a specialized area in their electronic documentation flow sheet used in the postpartum period that included a section for documenting completion of parental education and other safety interventions. In addition to these interventions, the staff also implemented the practice of rounding hourly on the patients which allowed the staff the ability to intervene with, for example, exhausted mothers who were still holding their newborns. The staff could then help the mother place the newborn back in his/her designated crib so they could both sleep safely. Since the initiation of their Newborn Fall Prevention Program consisting of parent teaching, pledge for patient safety, infant safety signage, hourly rounds, and promotion of maternal rest, the hospital reported that there were no infant falls during the subsequent eleven months. Galuska contributed the success of the program to the increased awareness produced by patients and families working together to increase maternal rest to its optimal potential (Galuska, 2011).

Other recommended strategies to reduce the risk of infant falls and sudden unexpected postnatal collapse include: education for parents about the risk of newborn falls occurring from the bed or a chair, warning against sleeping while holding the infant, and making sure caregivers know to let the hospital staff know when they are putting their baby down to sleep (Paul et al.,

2011). According to these strategies, each educational program should be approached with the parents in a nonjudgmental manner in order to ensure the parents are aware of the importance of reporting harmful incidents such as falling (Paul et al., 2011). If staff members are rounding through patients' rooms and observe a parent who appears exhausted or is sleeping while holding his/her newborn, the staff member can help place the infant in the bassinet in order to secure safety for the newborn (Galuska, 2011).

When it comes to hospital staff members monitoring patients, if a staff member is not available for assistance immediately, newborns are at risk of falling onto the floor or falling into a position that could lead to sudden unexpected postnatal collapse (Feldman-Winter & Goldsmith, 2016). However, the downside of staff monitoring is the challenge of balancing the parents' and especially the mother's need for rest while also frequently checking on the safety of the mothers and newborns (Slogar et al., 2013).

Methods

Based on the review of literature, it is clear that there is a pressing need to increase parent awareness about newborn safety and especially about performing safe skin-to-skin care. Through collaboration with the Clinical Educator for the Mother/Baby unit and the Perinatal Education Coordinator at an area hospital, I developed an informational video for expectant parents that was shown in the prenatal classes on labor and birth. Class participants were then asked to evaluate the video.

Setting

The setting for the study was a large public hospital in a large metropolitan area in the southeastern United States. The health care agency includes a 70 bed birthing center consisting of a labor and delivery, mother/baby units, newborn nursery, and a special care nursery: there are

approximately 5000 births each year. Through their perinatal education program, the birthing center offers a variety of prenatal classes to expectant parents. The video was presented during one of these prenatal classes.

Sample

The sample included expectant parents who participated in ten prenatal education classes on preparation for labor and birth during the months of January and February, 2017. Prenatal education classes consisted of ten to twelve participants in each class.

Procedure

Creating the Video

The process of creating the video and survey began with outlining the content of the video based on the review of literature and current practice recommendations (See Appendix A). The outline was reviewed by three content experts in perinatal care: the Clinical Educator for the Mother/Baby unit at the Birthing Center, the Perinatal Education Coordinator for the Birthing Center, and a School of Nursing faculty member with expertise in perinatal care. The outline was revised based on their input.

The next step was to write a draft of the video script (Appendix B). When completed, it was reviewed by the same three content experts in perinatal care who had reviewed the outline. Revisions were made according to their input. The script was then edited so that it was at a sixth grade reading level to ensure that the content was understandable for the general population and around the average American reading level (Medline Plus, 2016). It is also recommended for health information to be written between a sixth and eighth grade reading level (Medline Plus, 2016). The content of the video was based on the review of literature. Research suggests that safe-sleep practices and safe skin-to-skin care are essential in the prevention of newborn infant

falls (Matteson et al., 2013). Ludington-Hoe and Morgan (2014) emphasized that a very vital piece of information for mothers and other family members is how to position the newborn safely on the mother's or the caregiver's chest. Additionally, multiple risk factors for SUPC and newborn infant falls are associated with positioning of the newborn (Ludington-Hoe & Morgan, 2014). Ludington-Hoe and Morgan (2014) provided a safe positioning checklist, which helped influence the content of the video. The major points related to safe positioning for a newborn while the mother is performing skin-to-skin care include the following: "(1) mother or provider of skin-to-skin care is in reclining position, not flat, (2) infant's back is covered and hair is dry, (3) infant is well-flexed on provider's chest, (4) infant's shoulder's are flat against provider's chest, (5) infant is chest-to-chest with provider, not over a breast, (6) infant's head is turned to one side, (7) infant's face can be seen, (8) infant's nose and mouth are visible and uncovered, and (9) infant's neck is straight, not bent" (Ludington-Hoe & Morgan, 2014, p. 31).

Ludington-Hoe and Morgan (2014) also suggest that new parents as well as other visiting family members should be made aware that healthcare personnel should be observing the mother and newborn closely after birth because mothers are typically exhausted after labor and the release of oxytocin during skin-to-skin contact can cause mothers to feel sleepy. Additionally, mothers should be encouraged to use the call bell system for assistance with their newborn as needed (Feldman-Winter & Goldsmith, 2016). It is important for mothers to be aware of and reassured that assistance is nearby so that they do not feel the pressure to independently perform all of their newborn's care needs, especially when they are experiencing post-birth exhaustion, which could lead to preventable infant falls. In my video script, I mention that if the mother or caregiver ever starts to feel tired, she or he should immediately call for the nurse who will always be stationed close to their room for assistance. I also include that if no one is there to watch you

sleep with your baby, then you should place the infant on his/her back in the baby's own firm bed, which follows guidelines presented by the AAP (Feldman-Winter & Goldsmith, 2016).

The video was created using the video software VideoScribe. The software was a low-cost method using animations and voice recordings. Using video software that required only animations allowed me to create a video without needing consents or hired actors. The video animations also appropriately showed characters of different ethnicities and skin tones. The video runs approximately two minutes long from start to finish.

Once the video was completed, it was reviewed by the three content experts representing the Birthing Center and the School of Nursing. Suggested edits made to the informational video included changing an illustration that showed a baby with a pacifier in his/her mouth to an illustration with a baby without a pacifier while the video goes over the topic of safe positioning. With the pacifier present, the reviewers felt it gave a subtle message to viewers about using a pacifier in the hospital when "baby-friendly" hospitals do not encourage breastfeeding babies to use a pacifier immediately. After this correction to the video was made, the area hospital began showing it in their prenatal classes, and the process of evaluating the video began.

Instrumentation

The evaluation tool was a 12-question survey. Originally, the survey was an online evaluation that class participants could access via a URL given to them at the end of their prenatal class. Due to a low response rate, the format of the survey was switched to paper and distributed to the participants after the video. The survey was optional. Those who completed the survey turned it in to the instructor at the end of the class.

The first five questions of the survey asked for basic demographic information such as gender, weeks of gestation, and level of education. The next six items were Likert-type questions

focused on evaluating the video, using a scale of 1= strongly agree to 5= strongly disagree. The final item was an open-ended question that provided opportunity for participants to comment or ask any questions they had about the video or newborn safety.

The three experts who reviewed the video reviewed the survey. The survey was not pilot tested due to lack of time for the study.

Data Analysis

Online and written responses to the survey were analyzed using Qualtrics software. The analysis displayed descriptive statistics such as response frequencies and mean scores.

Procedure

The Institutional Review Board (IRB) at UNC Chapel Hill deemed this study to be exempt. The video was used in childbirth preparation classes taught by staff of the Birthing Center. Following the video, every prenatal class attendee was invited to participate in an optional survey, which can be found in Appendix B. The class instructor informed the expectant parents that the survey was part of a senior honor's project for a student in the baccalaureate nursing program at the University of North Carolina at Chapel Hill and that their participation was voluntary.

Results

Over approximately two-months, there were a total of 87 responses to the survey out of ten prenatal classes with ten to twelve participants in each class. This is a response rate of about 87%. The majority of the respondents were the expectant mothers (60%), although 40% were the male partners. The majority (93%) were in their third trimester of pregnancy with their first baby, and had earned at least a college or graduate degree (98%). The demographic results of the survey can be found in Table 1.

Table 1

Demographics of the Sample (n=87)

Characteristics	N (%)
Gender	
Male	35 (40%)
Female	52 (60%)
Weeks Gestation	
13-27 Weeks	6 (7%)
28-42 Weeks	81 (93%)
First Baby	
Yes	86 (99%)
No	1 (1%)
Highest Level of Education Completed:	
High School Diploma/GED	2 (2%)
College Degree	44 (51%)
Some Graduate	5 (6%)
Graduate Degree	35 (41%)

Table 2 (Appendix C) displays the responses to the Likert-type items. Responses to the Likert-type items about the video indicated that approximately 64% of the respondents liked the format. The majority (80%) agreed that the information in the video was easy to understand with a few outliers disagreeing and one stating in the open-ended comments section that the video information went too fast to be completely understood. Most (77%) of the survey respondents were familiar with the concept of skin-to-skin contact prior to watching my video. However, only 41% indicated that they were familiar the safety concerns surrounding skin-to-skin contact. After viewing the video, 77% of the respondents agreed and strongly agreed that they were

comfortable with the concept of skin-to-skin and 80% believed they could perform the practice safely. Sixty percent of the survey participants strongly agreed or agreed that all parents should see the video, while 28% provided a neutral response.

Most respondents declined to respond to the open-ended question. However, some of the written responses included questions such as "How frequently and for how long should skin-to-skin be performed?" and "What positions are safe? How long should it last?" One respondent asked, "Is there any reproducible scientific evidence supporting the alleged benefit?"

Discussion

The demographics of the survey respondents correlated with the typical attendees of the labor/preparation prenatal classes at the area hospital (A. Jones, personal communication, March 24, 2017). Males composed 40% of the survey respondents, which is consistent with the fact that this area hospital typically includes spouses and partners in their prenatal classes (A. Jones, personal communication, March 24, 2017). Prenatal classes are recommended for first-time expectant parents, which is why 99% of the respondents indicated that this was their first baby (A. Jones, personal communication, March 24, 2017). Overall, this was a very highly educated group of respondents with most respondents indicating they had earned undergraduate and graduate school degrees. This is consistent with the population of patients who utilize the services of this health care agency; most are privately insured middle to upper class individuals (A. Jones, personal communication, March 24, 2017).

In the video evaluation portion of the survey, 87% of the respondents liked the format of the video. Most women and their partners of childbearing age are of the millennial generation with preferences for interactive technology/visual learning, which makes a video a good choice for them (Novotney, 2010). One respondent's comment in the open-ended section asked for more

scientific evidence supporting the benefits of skin-to-skin care, which is consistent with the higher education level of the respondents. Seventy-seven percent of the respondents agreed or strongly agreed with the statement that they were already familiar with skin-to-skin prior to the video. The high education levels present amongst the group could have also contributed to this factor as well. Interestingly enough, only 41% of the respondents indicated that they were familiar with the safety concerns associated with skin-to-skin care. This supports the need to present this informational video to all parents and supports the need to provide more education to parents on how to keep their newborn safe. After viewing the video, 78% of the respondents indicated that they were comfortable with the concept of skin-to-skin. These results implied that the video provided an accurate background on the benefits of skin-to-skin care and that a majority of the respondents were already aware of these presented benefits. The area where the survey responses changed the most was in relation to newborn safety. Prior to the video, only 41% of the respondents indicated that they were familiar with the safety concerns surrounding skin-to-skin care. This is not surprising as the topic of newborn safety and safe skin-to-skin care has only recently appeared in the literature and is just beginning to be incorporated into parent education (Feldman-Winter & Goldsmith, 2016). After the presentation of the video, 81% of the respondents were confident that they could perform skin-to-skin care safely. This suggests that the video was effective in increasing awareness and understanding of newborn safety when performing skin-to-skin care. This increase in awareness is what can lead to the prevention of infant falls and SUPC.

Even though 78% of the respondents indicated that they were familiar and comfortable with the concept of skin-to-skin care, there were still questions written in the open-ended section of the survey concerning the topic. Questions posed by the expectant parents in their responses to

the open-ended question suggested that the video prompted them to actively think about the concept of skin-to-skin care and how to perform it safely. The additional questions about content that were not addressed in the video suggest that there is a need for further education for expectant parents surrounding the topic of newborn safety.

Limitations

This study was limited in terms of the sample size; ideally, the video should have been evaluated by more than 87 expectant parents. The setting was one Birth Center in a large metropolitan area; the video and survey need to be tested in other settings that have more diversity of patient population.

The video was short (approximately two minutes) and the visual images were drawings or caricatures, not images of live people or newborns. Comments from participants indicated that they would have preferred to see real people in the video.

Ideally, the video would have been piloted with a group of expectant parents prior to using it in the prenatal classes. Similarly, the survey should have been piloted prior to using it in the classes.

Implications for Practice and Research

While skin-to-skin care during the first one to two hours after birth is routine in most settings, only recently has there been attention to safety aspects of STS and preventing newborn falls. In the fall of 2016, the AAP published new guidelines about safe skin-to-skin and preventing infant injury. For many health care professionals and new parents who are already familiar with the benefits of skin-to-skin, there is a need to increase awareness of safety issues surrounding care of newborns through education. One instructional strategy that could be used is a video such as the one created for this project. Videos provide information through words and

images; the images allow the viewer to visualize how skin to skin can be done safely in order to prevent newborn falls or other injury. The video could be shown to hospital staff as part of continuing education activities and can be shown to parents in prenatal classes. It could be available to expectant parents during prenatal visits to their health care providers in office or clinic settings. A video might be added to newborn channels for in-hospital viewing or it might be made available to parents through websites of hospitals and birthing centers. This video is actually available through YouTube: https://www.youtube.com/watch?v=q9dt3HDoqKU. It has already been used in maternal/newborn classes for BSN students at UNC Chapel Hill.

In an effort to increase awareness of newborn safety and prevention of falls and SUPC, further evidence-based practice is imperative. To discover what practice and enhancements are ideal for preventing in-hospital newborn falls and SUPC, studies surrounding the effectiveness of different education programs are necessary. Using this evidence-based practice to then implement a standardized educational program and staff protocol would help prevent SUPC, falls, and suffocation (Feldman-Winter & Goldsmith, 2016). Additionally, more evidence-based practice that would evaluate the effectiveness of parent education on safe skin-to-skin care is needed. This evidence-based practice is needed to discover whether preventative education would be more effective in the prenatal class setting, where this study took place, or in the postpartum period when the parents and babies are still in the hospital. There is also a need for further evaluation on the methods of education given to hospital staff and parents to determine whether or not informational videos are the most effective means of delivering preventative information surrounding infant falls and SUPC.

Conclusion

Newborn injuries that result from infant falls and sudden unexpected collapse are completely preventable, especially events that occur in a hospital setting. The incidents of these events can be reduced by developing educational programs, such as an educational video, for parents including information on how to properly perform skin-to-skin care. Through increased awareness and education of expectant parents and healthcare professionals, safe skin-to-skin care can be implemented and the risk of injury to newborns can be significantly reduced.

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APPENDIX A

Finalized Script

Hello! As you get ready to welcome your new baby, I wanted to talk to you about a concept known as "skin-to-skin contact." Right after birth, holding your baby on your chest so that your skin is touching your baby's skin is important for you and your baby. Skin-to-skin contact helps your baby adjust to being born. It keeps your baby warm and makes it easy to start breastfeeding. Skin-to-skin contact helps you bond with your baby, and cuts down on stress for you and your baby. Skin-to-skin contact can also help with any pain the newborn may have and even help adjust your baby's low blood sugars. Did you know that mom is not the only one who can do skin-to-skin with the new baby? Dads, grandmas, and other family members and friends can perform skin-to-skin as well. As you can see, skin-to-skin contact is great for your baby. However, what is even more important is keeping your baby safe in the hospital as well as at home. In order to do skin-to-skin contact safely, there are simple steps that you and your loved ones should practice. While performing skin-to-skin, use safe positioning!

1. Make sure you can see your baby's beautiful face, nose and mouth completely.
2. Your baby's head should be tilted slightly upwards in a "sniffing" position and his or her neck should be straight.
3. Finally, make sure your baby is "chest to chest" with his or her head turned to one side.

Also, remember to rest safely! If you're feeling sleepy at all, put your baby on his or her back in the baby's own bed and get some rest of your own. Don't be afraid to tell someone if you are too sleepy to hold your baby. Ask your nurse for assistance if no one is there to watch you and your baby. For more information and tips on performing safe skin-to-skin contact, talk with your nurses and physicians! Thank you.

APPENDIX B

Survey Questions

1. Gender:

   Select one: ____Male

   ____Female

2. How far into the pregnancy are you/your partner?

   Select one:

   _____1-12 weeks

   _____13-27 weeks

   _____28-42 weeks

3. Is this your first baby?

   Select one:

   _____Yes

   _____No

4. Highest Level of Education Completed?

   Select one:

   _____Some High School

   _____High School Diploma/GED

   _____Some College

   _____College Degree

   _____Some Graduate

   _____Graduate Degree

Part 2: Evaluation of the Video

Please answer the following questions using Strongly Disagree (5), Disagree (4), Neutral (3), Agree (2), or Strongly Agree (1):

1. I liked the format of the video.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

2. This information is easy to understand.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

3. Before viewing the video, I was familiar with the concept of skin-to-skin.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

4. Before viewing the video, I was familiar with the safety concerns surrounding skin-to-skin care.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

5. After viewing the video, I am comfortable with the concept of skin-to-skin.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

6. After viewing the video, I believe I can perform skin-to-skin care safely.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

7. All parents should see this video.

Strongly Agree		Neutral		Strongly Disagree
1	2	3	4	5

Open-Ended:

Having seen the video what questions or comments do you have about safe skin-to-skin?

Table 2

Video Evaluation

Question	I liked the format of the video.	This information is easy to understand.	Before viewing the video, I was familiar with the concept of skin-to-skin.	Before viewing the video, I was familiar with the safety concerns surrounding skin-to-skin care	After viewing the video, I am comfortable with the concept of skin-to-skin.	After viewing the video, I believe I can perform skin-to-skin care safely.	All parents should see this video.
1 =Strongly Agree	31.03% (27)	56.32% (49)	40.23% (35)	16.09% (14)	47.13% (41)	48.28% (42)	27.59% (24)
2 = Agree	33.33% (29)	24.21% (21)	36.78% (32)	25.29% (22)	29.89% (26)	32.18% (28)	32.18% (28)
3 = Neutral	22.99% (20)	8.05% (7)	6.9% (6)	29.89% (26)	11.49% (10)	8.05% (7)	27.59% (24)
4 = Disagree	10.34% (9)	4.6% (4)	11.49% (10)	25.29% (22)	6.9% (6)	4.6% (4)	8.05% (7)
5 = Strongly Disagree	2.3% (2)	6.9% (6)	4.6% (4)	3.45% (3)	4.6% (4)	6.9% (6)	4.6% (4)
Mean	2.2	1.82	2.03	2.75	1.92	1.90	2.30